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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,994	10/21/2003	Hiroiyuki Yoshida	4255-5	4547

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NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

TRINH, THANH TRUC

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 10/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/688,994

Applicant(s)

YOSHIDA ET AL.

Examiner

Thanh-Truc Trinh

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/21/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Reference No. 62 is not on the drawings. (See page 4, lines 13).

Appropriate correction is required.

On page 6 at line 24, page 15 at line 19, claim 1 at line 10, claim 14 at line 8, before "being captured", -- these -- should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 5, 10-11 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 5 and 14, "more or less" are relative terms which render the claim indefinite. The terms "more or less" are not defined by the claim, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Regarding claim 10, "PP-EPDM" lacks antecedent basis.

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Regarding claim 11, the disclosure in support of the claimed invention renders the claim indefinite, because it fails to describe or explain how additives containing elastomer resin that made up the edge face sealing member can prevent discoloration of the sealing resin layer(s) of EVA. The edge face sealing member with additives can only prevent the rim of a sealing resin layer from discoloration, but not the entire layer.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoda et al.

Regarding claim 1, Yoda et al disclose a solar cell module 10 with edge face sealing 51 shapes like frame surrounding the outer edge of the solar panel 8. The solar panel composes of plurality of solar battery cells or solar cell module bodies. (See Fig. 1 and Fig. 2)

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Regarding claims 2-3, Yoda et al also disclose the cross section of the edge face sealing member 51 is roughly c-shaped or u-shaped; the upper sealing region abuts the front surface of the solar cell module body; the lower sealing region abuts the back surface of the solar cell module body; the side sealing region abuts the edge face of the solar cell module body. Yoda et al further disclose the lower sealing region is longer than the upper sealing region. (See Fig. 4B)

Regarding claim 14, Yoda et al disclose a solar cell module 10 with frame-like edge face sealing 51. The edge face sealing with adhesive layer 4 are used to capture solar module bodies 8. (See Fig. 1)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al in view of Meadows.

Yoda et al disclose a solar cell module as described above in paragraph 3.

Yoda et al do not disclose the projection(s) formed on each of the surface of the upper and lower regions of the edge face sealing member.

Meadows teaches that plastic edge face sealing 11 with plastic projection-like ribs 24, 25 (or 52, 53) in parallel fashion has the benefit of holding the panel or the like and providing a seal which prevents entrance of air, water or other fluids. (See col.3 lines 35-54). Meadows also discloses the lips (or tip portions) 22, 23 (or 48, 46 on Fig. 5 or 49, 47 on Fig. 6) of the lower and upper sealing regions are disposed in inclined fashion. (See Fig. 2-3, 5-6; or col. 3 lines 13-15)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Yoda et al by applying elastomeric edge face sealing with inclined tip portions and projections in parallel, as taught by Meadows, to achieve a superior in sealing and holding solar cell panels (col. 1, lines 18-20).

8. Claim 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al in view of Yamada et al.

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Yoda et al disclose a solar cell panel composed of a front cover 1, a filler 6b, solar batteries 2, a filler 6a, and a back cover 3, respectively. The back cover is used to protect another side of the solar cell. In this way, the solar cell panel is laminated. (See Figure 1 or col. 4 lines 48-67). Yoda et al also disclose an adhesive layer 4 is used to attach aluminum frame and the solar panel 8, wherein the adhesive layer is made of butyl rubber, expanded EPDM or silicone resin. Butyl rubber and EPDM are elastomer. (See Col. 5 lines 4-11). The adhesive layer is considered to be a member of the edge face sealing.

Yoda et al fail to elaborate the filler layers.

Yamada et al do give several examples of commonly used fillers, which include ethylene-vinyl acetate copolymer (EVA). (See col. 4 lines 53-55)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to recognize EVA is one type of filler that is commonly used in photovoltaic technology.

9. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al and Yamada et al as applied in paragraph 8, and further in view of Kirchmann et al.

Yoda et al and Yamada et al disclose a module as described above in addressing claim 7.

Neither Yoda et al or Yamada et al teach using polypropylenic or polystyrenic resin such as PP-EPDM or polystyrene-isoprene for sealing member.

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Kirchmann et al disclose suitable thermoplastic elastomers for sealing.

Two of those thermoplastic elastomers are SIS (a polystyrenic copolymer, polystyrene-isoprene blend) and EPDM/PP (a polypropenic copolymer). (See col. 4 lines 4-16).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Yoda et al by using thermoplastic elastomers, specifically SIS and PP-EDPM, for edge face sealing, as taught by Kirchmann et al. In addition, the choice of using thermoplastic elastomers for sealing is typical, because of its characteristics such as weather resistance, heat resistance, flexibility, etc...

10. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al, Yamada et al and Kirchmann et al as applied to claim 9, and further in view Kotani et al.

Yoda et al, Yamada et al disclose a module as described above in addressing claim 7.

Kirchmann et al teach the use of SIS and PP-EDPM as described in paragraph 10.

Neither Yoda et al or Yamada et al or Kirchmann et al teach using additives, particularly magnesium silicate, to prevent yellowing of sealing resin layer.

Neither Yoda et al or Yamada et al or Kirchmann et al teach using additives with ultraviolet-resistant agents.

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Regarding claim 11-12, Kotani et al teach that addition of inorganic compound such as magnesium silicate will improve heat retention without impairing the transparency. (See col. 14 lines 39-68, col. 15 lines 1-6). In other words, magnesium can be used to prevent yellowing or discoloration of transparent layer such as EVA layer.

Regarding claim 13, Kotani et al also describe ultraviolet absorbers can be used as an agent for weather resistance. (See vol. 11 lines 36-43, and col. 13 lines 22-31). The ultraviolet absorbers are commonly used as ultraviolet-resistant.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Yoda et al by applying edge face sealing member with polypropylenic SIS or polystyrenic PP-EDPM resins comprising of additive magnesium silicate to prevent discoloration, and ultraviolet-resistant agents to prevent degradation due to ultraviolet light.

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al in view of Yamada et al.

Yoda et al disclose a solar cell module 10 with edge face sealing 51 shapes like frame, and solar battery panel 8. The solar battery panel 8 comprises of a front cover 1, a filler 6b, solar batteries 2, a filler 6a, and a back cover 3, respectively. The back cover is used to protect another side of the solar cell. In this way, the solar cell panel is laminated. (See Figure 1 or col. 4 lines 48-67)

Yoda et al fail to elaborate the filler layers.

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Yamada et al do give several examples of commonly used fillers, which include ethylene-vinyl acetate copolymer (EVA). (See col. 4 lines 53-55)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to recognize EVA is one type of filler that is commonly used in photovoltaic technology.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1-3 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Shingo et al ' 440 (Sharp Corp, English translated copy is provided).

Regarding claim 1, Shingo et al '440 disclose a solar cell module 2 with frame elements 51, 52, 53, 54 of the edge face sealing surrounding the outer

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edge of the solar module bodies 4. The solar panel composes of plurality of solar battery cells or solar cell module bodies. (See Fig. 2)

Regarding claims 2-3, Shingo et al '440 also disclose cross sections of one of the edge face sealing members 54, which is roughly c-shaped or u-shaped; the upper sealing region 54d abuts the front surface of the solar cell module body; the lower sealing region 54c abuts the back surface of the solar cell module body; the side sealing region 54e abuts the edge face of the solar cell module body. Shingo et al '440 further disclose the lower sealing region 54c is longer than the upper sealing region 54d. (See Fig. 4, 15)

Regarding claim 14, Shingo et al '440 disclose a solar cell module 2 with frame-like edge face sealings 51, 52, 53, 54. The edge face sealings are used to capture solar module bodies 4. (See Fig. 1-2)

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shingo et al '440 in view of Meadows.

Shingo et al '440 disclose a solar cell module as described above in paragraph 13.

Shingo et al '440 do not disclose the projection(s) formed on each of the surface of the upper and lower regions of the edge face sealing member.

Meadows teaches that plastic edge face sealing 11 with plastic projection-like ribs 24, 25 (or 52, 53) in parallel fashion has the benefit of holding the panel or the like and providing a seal which prevents entrance of air, water or other fluids. (See col.3 lines 35-54). Meadows also discloses the lips (or tip portions) 22, 23 (or 48, 46 on Fig. 5 or 49, 47 on Fig. 6) of the lower and upper sealing regions are disposed in inclined fashion. (See Fig. 2-3, 5-6; or col. 3 lines 13-15)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Shingo et al '440 by applying elastomeric edge face sealing with inclined tip portions and projections in parallel, as taught by Meadows, to achieve a superior in sealing and holding solar cell panels (col. 1, lines 18-20).

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17. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shingo et al '440 in view of Shingo '276.

Shingo et al '440 disclose a solar cell module as described above in paragraph 13.

Shingo et al '440 do not explicitly describe the layers of solar cell panels.

Shingo '276 disclose a solar cell module, wherein the solar cell module body is laminated in the order of a front cover 61, EVA resin layer 63, one or more solar cells 60, EVA resin layer 63, and the back cover 62 for protection.

(See page 2, paragraph 0003; and Fig. 8)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply solar cell module taught by Shingo '440 to edge face sealing taught by Shingo et al, because this is a matter of design choice well within the level of ordinary skill in the art, based on the effectiveness and popularity of the lamination process of front cover, EVA, solar cell, EVA and the back cover.

18. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shingo et al '440 and Shingo '276 as applied in paragraph 17, and further in view of Kirchmann et al.

Shingo et al '440 and Shingo '276 et al disclose a module as described above in paragraph 17.

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Neither Shingo et al '440 or Shingo '276 teach using polypropylenic or polystyrenic resin such as PP-EPDM or polystyrene-isoprene for sealing member.

Kirchmann et al disclose suitable thermoplastic elastomers for sealing. Two of those thermoplastic elastomers are SIS (a polystyrenic copolymer, polystyrene-isoprene blend) and EPDM/PP (a polypropenic copolymer). (See col. 4 lines 4-16).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Yoda et al by using thermoplastic elastomers, specifically SIS and PP-EDPM, for edge face sealing, as taught by Kirchmann et al. In addition, the choice of using thermoplastic elastomers for sealing is typical, because of its characteristics such as weather resistance, heat resistance, flexibility, etc...

19. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shingo et al '440, Shingo '276 et al and Kirchmann et al as described in paragraph 18, and further in view Kotani et al.

Shingo et al '440, Shingo '276 et al disclose a module as described above in paragraph 17.

Kirchmann et al teach the use of SIS and PP-EDPM as described in paragraph 18.

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Neither Shingo et al '440 or Shingo '276 et al or Kirchmann et al teach using additives, particularly magnesium silicate, to prevent yellowing of sealing resin layer.

Neither Shingo et al '440 or Shingo '276 or Kirchmann et al teach using additives with ultraviolet-resistant agents.

Regarding claim 11-12, Kotani et al teach that addition of inorganic compound such as magnesium silicate will improve heat retention without impairing the transparency. (See col. 14 lines 39-68, col. 15 lines 1-6). In other words, magnesium can be used to prevent yellowing or discoloration of transparent layer such as EVA layer.

Regarding claim 13, Kotani et al also describe ultraviolet absorbers can be used as an agent for weather resistance. (See vol. 11 lines 37-43, and col. 13 lines 22-31). The ultraviolet absorbers are commonly used as ultraviolet-resistant.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Shingo et al '440 by applying edge face sealing member with polypropylenic or polystyrenic resins comprising of additive magnesium silicate to prevent discoloration, and ultraviolet-resistant agents to prevent degradation due to ultraviolet light.

20. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shingo et al '440 in view of Shingo '276.

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Shingo et al '440 disclose a solar cell module as described above in paragraph 13.

Shingo et al '440 do not explicitly describe the layers of solar cell panels.

Shingo '276 disclose a solar cell module, wherein the solar cell module body is laminated in the order of a front cover 61, EVA resin layer 63, one or more solar cells 60, EVA resin layer 63, and the back cover 62 for protection. (See page 2, paragraph 0003; and Fig. 8)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply solar cell module taught by Shingo '440 to edge face sealing taught by Shingo et al, because this is a matter of design choice well within the level of ordinary skill in the art, based on the effectiveness and popularity of the lamination process of front cover, EVA, solar cell, EVA and the back cover.

Conclusion

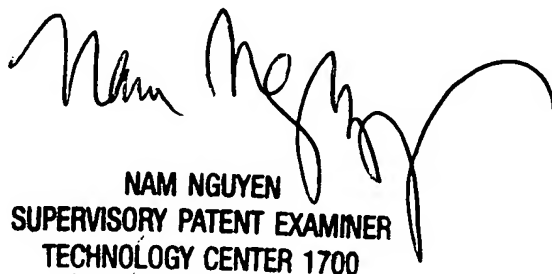
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Truc Trinh whose telephone number is 571-272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700